An Interventional Radiology Clinical Rotation to Enhance Student Learning

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ABSTRACT
To achieve the goal of adequately preparing graduating nurses for entry into practice, an undergraduate clinical nursing curriculum was enhanced by including an interventional radiology clinical rotation. The author describes the basics of this experience and the planning steps prior to implementation, including hospital approval, preceptor selection, and evaluation of the overall clinical experience.

The ultimate goal of most schools of nursing is to adequately prepare their graduates for entry into practice. To achieve this goal, institutions must offer their students current and relevant clinical experiences. In addition, Ballard and Trowbridge (2004) stated that the clinical curriculum should adapt to the constant changes occurring within the health care system and must match the students' learning priorities with their practicum experiences.

According to Silen-Lipponen, Tossvainen, Turunen, and Smith (2004), less traditional clinical rotations must be considered to accommodate recent changes in the delivery of health care. A traditional nursing curriculum does not include the interventional radiology department as a clinical rotation. Nursing students will often graduate from nursing school with little or no exposure to this department. With the increase in frequency of minimally invasive procedures completed in the interventional radiology department, clinical rotations within this setting have become necessary to adequately prepare nursing students for entry into practice. Minimally invasive procedures are diagnostic or surgical procedures that allow the smallest possible degree of cutting, blood loss, and trauma to the patient (Worthington-Kirsch, 2004). This article describes the planning, implementation, and evaluation of a clinical rotation in the interventional radiology department with third-year baccalaureate nursing students in Ontario, Canada.

Background
Minimally invasive procedures are currently performed more than ever before (Duszak & Mabry, 2003), and the number and variety of these procedures are increasing rapidly (Sunshine & Cypel, 2004). Medical procedures, which were once major surgical operations, are now successfully completed in the interventional radiology department using minimally invasive procedures. These procedures are often performed with the patient fully awake, with little or no sedation required. The increased frequency of minimally invasive procedures performed in the interventional radiology department results in a demand for today's hospital ward nursing staff to not only understand the basics of these procedures, but also have sufficient knowledge to safely and effectively care for these patients during the recovery period.

The clinical curriculum of nursing schools should adequately reflect current practices to ensure graduates are sufficiently prepared to care for all kinds of patients. Traditionally, nursing students experienced medical, surgical, obstetrical, psychiatric, and pediatric rotations during their basic nursing education. The rationale for these diverse clinical rotations was that this would ensure nursing students received adequate exposure prior to entering practice as new graduates.

The interventional radiology department provides a wealth of experiences for baccalaureate nursing students. Within this department, nursing students would experience:

- Pre-procedure assessments.
- Medication administration and evaluation.
- Pain assessments.
- Maintenance of surgical asepsis.
- Intraprocedure assessments.
- Anatomy and physiology reviews.
- Post-procedure care.

In addition, patients with femoral artery punctures require post-pro-
procedure monitoring for up to 6 hours, during which time they must lie flat with their legs straight. As a result, students are provided with valuable time to interact with the patient and use their communication, therapeutic relationship, caring relationship, and family assessment skills.

Developing an Interventional Radiology Clinical Experience

Initial contact was made with the charge technologist in the interventional radiology department of a large teaching hospital located in southern Ontario, Canada. A written proposal was submitted to the interventional radiology department and to the nursing education department for evaluation and consideration. The proposal included the number of nursing students requiring clinical time in the interventional radiology department (N = 10), specific dates and hours of contact time, formal learning objectives, and a copy of the prior learning requirements to be completed by the nursing students prior to the intervention. The proposal was distributed to all 10 nursing students, and the assignment was to be submitted 1 week prior to the commencement of this learning experience.

The purpose of the learning assignment was to ensure the nursing students had a basic understanding of the interventional radiology department. Completion of this assignment prior to the experience permitted the students to proceed into direct patient care, rather than spending valuable time covering material that could be learned outside the clinical time. All of the nursing students were advised that failure to complete the pre-interventional radiology learning assignment or the Pre-Interventional Radiology Clinical Experience Questionnaire would result in disqualification from participation in the interventional radiology clinical experience.

Pre-Interventional Radiology Clinical Experience Questionnaire

Ten questionnaires were administered and returned prior to the commencement of the clinical rotation (return rate = 100%). The results of the Pre-Interventional Radiology Clinical Experience Questionnaire demonstrated a significant lack of knowledge among these third-year nursing students related to the kinds of procedures completed in the interventional radiology department, the kinds of patients treated in the department, the staff members who work in the department, and the level of care required for patients receiving procedures in the department. Of the 10 respondents, 20% (n = 2) were able to correctly identify one procedure performed in the interventional radiology department; 80% (n = 8) either left this question blank or answered it incorrectly. In response to the question about the composition of staff in the interventional radiology department, 100% identified a physician or doctor, 20% (n = 2) identified a technologist, and 40% (n = 4) identified a nurse. Eighty percent (n = 8) of participants responded that patients in the interventional radiology department were those requiring an x-ray and did not elaborate further.

Pre-Interventional Radiology Learning Assignment

The learning assignment required the participants to use a variety of resources (e.g., Internet, textbook, journal articles, library) to research the kinds of procedures completed in the interventional radiology department; the meaning of minimally invasive procedures; the patient care required before, during, and after an angiogram; the nursing responsibilities required when caring for patients receiving procedural sedation; and the composition of staff members within the interventional radiology department.

The results of the learning assignment demonstrated that all 10 nursing students were able to adequately research and obtain the required information. All students were able to sufficiently discuss an average of three procedures performed in the interventional radiology department, and all of them listed angiogram as their first response. All students were able to adequately discuss the term minimally invasive procedures, and 8 respondents further discussed the benefits of such procedures for patients. All of the nursing students adequately discussed the patient care required before, during, and after an angiogram. Regarding the composition of staff members within the interventional radiology department, after the learning assignment, 100% (n = 10) of participants listed a radiologist as their first choice, 80% (n = 8) listed a “tech,” and 40% (n = 4) listed a nurse.

Clinical Experience

On arrival to the interventional radiology department, the charge
technologist greeted each student and provided a brief tour and some initial instructions (e.g., use of lead aprons, aseptic uniform preparation). Following these instructions, the charge technologist assigned and introduced each student to either an RN or a Registered Medical Radiation Technologist, depending on suitability (determined by the charge technologist), with whom the students would work for the two shifts.

Following completion of the 15 hours of interventional radiology clinical experience, each nursing student was required to complete a Post-Interventional Radiology Clinical Experience Questionnaire (Table 2), the results of which were analyzed for experiential themes and which was used as a tool for evaluation of the experience.

Results: Post-Interventional Radiology Clinical Experience Questionnaire
All of the students completed the Post-Interventional Radiology Clinical Experience Questionnaire (Table 2) (return rate = 100%). This questionnaire explored the students' knowledge about the kinds of procedures performed in the interventional radiology department, the level of care required for patients receiving procedures in the department, and the composition of staff in the department.

The participants listed an average of 16 different procedures performed in the interventional radiology department. In response to the question about the level of care required by patients following minimally invasive procedures, 90% (n = 9) of participants responded that diligent nursing care or measurement of vital signs every 5 minutes was routine and that these patients required critical care. Regarding the question about the composition of staff in the interventional radiology department, 100% (n = 10) of respondents indicated nurse as their first choice, and 90% (n = 9) chose technologist as their second choice.

The Post-Interventional Radiology Clinical Experience Questionnaire also explored the students' overall perceptions of the interventional radiology clinical experience and their perceptions of its value to their nursing education. All participants (n = 10) described the rotation as valuable. Reasons included:

• Increased knowledge about the frequency with which minimally invasive procedures are performed in the interventional radiology department.
• Increased knowledge about the care before, during, and after minimally invasive procedures.
• Increased confidence in caring for patients receiving minimally invasive procedures.
• Opportunity to discover an area of nursing that they did not know existed prior to this experience.

The students were also provided with space to write down any additional reasons for their positive or negative perceptions of this rotation. Eight students (80%) reported the ability to advocate on their patients' behalf regarding the availability of minimally invasive procedures.

Discussion
Examination of the Pre-Interventional Radiology Clinical Experience Questionnaire results revealed a significant knowledge gap among these third-year nursing students related to interventional radiology. Following the 15-hour clinical rotation, the students' knowledge base increased dramatically regarding the kinds of procedures performed in the interventional radiology department, the nursing care required for...
for these patients, and the composition of staff in the department.

In addition, the nursing students believed this rotation had greatly enriched their clinical experience and that with their increased knowledge base, they could more effectively advocate for their patients. Through this experience, the students became aware of the existence, scope of practice, and role of the interventional radiology department in today’s health care system. As a result of this increased knowledge, the participants may choose to pursue this area of nursing as a future career, which would decrease the staffing shortage in this specialty area.

Conclusion

Nurse educators should continually incorporate the most up-to-date clinical experiences within their curricula. With more minimally invasive procedures performed today than ever before, care of these patients is becoming more prevalent within hospital wards. Therefore, today’s nurses must have proficient knowledge about minimally invasive procedures and the care required before, during, and after these procedures.

It is recommended that educators include the interventional radiology department as a clinical rotation within their curricula. The feedback provided by the participants demonstrated that they and their patients experienced significant benefit from this experience. Future research is needed to explore the effects of an interventional radiology clinical experience on students’ ability to enhance their critical thinking skills. Research is also recommended to explore the effects of unconventional clinical rotations on retention rates and job readiness.

References


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